

# DRAGON

# USER



*The independent Dragon magazine*

July 1986

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**WELCOME** to the new Dragon User. By Subscription Only, DU's regulars are the heart of the Dragon community in Britain, with many nerves and arteries reaching overseas to Europe and beyond.

Gamers, serious programmers, and users experimenting with system design and communications have found the Dragon (which is the only popular 580S machine in the UK) a powerful and versatile tool and a good companion. Good enough to stick with despite the competition.

Now the Dragon world needs to stick together, keep the news circulating and ideas developing. Write to us about your User Group; show your copy of Dragon User to other Dragon owners, who may have missed their chance to subscribe through lack of foresight (or funds), so that they know that Dragon's own forum is still going strong.

**Remember** — if you want to subscribe, nothing could be easier. Send off £14 (in the UK) or £20 (overseas) to Dragon User, 12-13 Little Newport Street, London WC2 for 12 issues.

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**How to submit articles**  
The quality of the material we can publish in Dragon User each month will, to a very great extent, depend on the quality of the documents that you can make with your Dragon. The Dragon computer was launched off to the market with a powerful version of Basic, but with very poor documentation.

Articles when are submitted to Dragon User for publication should not be more than 5000 words long. All submissions should be typed. Please leave wide margins and a double space between each line. Programs should, wherever possible, be computer printed or just write down and be accompanied by a tape of the program.

We cannot guarantee to return every submitted article or program, so please keep a copy. If you want to have your program returned you must include a stamped, addressed envelope.

# Letters

This is the chance to air your views — send your fax, compliments and complaints to Letters Page, Dragon User, 12-13 Little Newport Street, London WC2H 7PP.

## Puzzle Query

I AM an avid fan of your competition page. Most of us realise we have only a small chance of winning, but because we have taken time and trouble to complete the program we would like to know the correct result and method to be used. Not just those who send in entries — after all, they have some idea. Others may be baffled but interested — why not give them the pleasure of learning from the correct method?

Dennis O'Malley  
23 Seaford Lane  
Conventry  
Covets CV3 7EP

If we get enough demand for this, we will ... but what should we drop to make the space?

Please don't feel neglected if you send an SAE but don't get a reply. DS doesn't support enough editors to write personally to all our readers — so we concentrate on urgent queries — where we are able to find an answer, that is. A good form of support is for readers to send us any information about problem-solving, or software news.

## Screen Change

IN ANSWER to Alan Green's letter (Dragon User Dec. 88) the program listed at the bottom of the page will convert the text screen to green on black. The CLE command is also updated but the CLEAR key and the RESET button will result in a green screen.

Has anybody had any luck with Spitz? I've carefully entered the program using several methods but each time I just get an irritating flicker.

10 CLEAR:000,32000  
20 FOR I=32040 TO 32055  
  PRINT I;  
30 POKE I,"AL" :BH" +  
  AS: NEXT  
40 FOR I=0 TO 197: PRINT

@ 0.CH:000;  
50 POKE I + 32047, PEEK  
  (1004) : NEXT  
60 FOR I=304, 126: POKE  
  300, 127  
70 FOR I=305, 25: POKE  
  418, 128  
80 FOR I=417, 127: POKE  
  418, 109  
90 GOTO 1  
100 DATA 32, 62, 34, 36, 90,  
  85, 81, 8, 20, 5, 80, 4, 0,  
  27, 55, 68, 20  
110 DATA 67, 64, 47, 62, 20,  
  10, 81, 0, 25, 4, 80, 20,  
  2, 0, 40, 20  
120 DATA 0, 10, 82, 77, 70,  
  48, 48, 86, 48, 47, 80,  
  85, 68, 60, 5  
130 DATA FF, 23, 11, 86, 4,  
  0, 6C, 88, 30, 60, 81,  
  8C, 5, 80, 20  
140 DATA F0, FF, 80, 80, 2,  
  35, 00, 00, 20, 47, 80,  
  9F, 18, C4  
150 DATA 1F, 20, F0, 0A, 2F,  
  1, 30, 00, 10, 60, 84, 62,  
  20  
160 DATA F8, C6, 28, 7C,  
  8A, 79

Paul Burpin  
10 Moorcroft Road  
Sheffield  
S10 4LS

## Tandy club

FIRSTLY, THANKS for an excellent mag. It is nice to know someone still cares. I own a Tandy CoCo 64K, I have had it for 2 1/2 years, and have been buying your mag all that time.

Now the complaint. How come the CoCo barely gets a mention? At least half (if not more) of your readers are Tandy owners. So please don't forget us.

Secondly — come on you programmers, don't forget us either. How about writing your programs for the CoCo as well as the Dragon. I know Basy and Microdeal have, but that is about it.

Thirdly, I would like to start a CoCo/Dragon Users' Club in the London area, to swap programs, ideas, etc. Anyone interested please contact me at the address as shown.

Once again Dragon User keep up the good work.

Mr S. R. Allcock  
187 Spurland  
London  
Essex SS15 5AG

## Monitor Bug

THANK YOU for publishing my MONITOR program. Unfortunately there is a bug in the program so that the Roy routine will only work on the graphics pages. To fix the routine, use the <u>u</u> enter routine to poke a \$H12 into memory location \$H0C74 to <u>u</u>C7E. Sorry for any inconvenience this may have caused people.

Peter Whitaker  
23 Newcut Street  
Cambridge  
CB2 1ND

## Nice one Roy!

I AM WRITING to compliment Roy Costes on his Jet Set Willy. All the Spectrum owners (and others anyway) were sick as a dog because of the seven screens (all the last count) more than the Spectrum. I keep rubbing it into the ribs in his fingers from the keyboard.

All in all the game is great and his new game, Sean Slater, looks just as good and this just goes to show the Dragon is far from dead and if you add the it's more alive than ever. Like what M. T. Butler said in his letter to the software companies, "You support us, and we will support you."

P.S. I think the Dragon User does a lot for the Dragons. Keep up the good work.

J. Enright  
20 Carlton Avenue  
Cheshire Hale  
Cheshire  
SAR 5DH

## Hacking Mad

ONE PROGRAM I have been trying to hack for the past few months I am glad to say I have finished. The following few pages, if typed before executing Madness and the Minotaur,

give the score command an extra facility. Instead of printing your strength it will reset your strength to its maximum. This has advantages if you get very weak from, say, being molested by creatures, or if you need to make a vital jump.

POKE \$B13,104  
POKE \$B14,255  
POKE \$B15,104  
POKE \$B16,5

POKE \$708, (0 to \$40 in steps of 5 — maximum number of points required)

or  
machine code  
LDA 255  
STA -505

Simon Hargrave  
Crawley Hill Farm  
Uley  
Dorset  
Glouce  
GL11 5BH

## Holy Days

I HAVE BEEN doing a fair amount of research into the Yorkshire Parish Records. All of them go 1750, March 24th 1598, as the change date. (See T. Bottomley's letter, May 1988.)

The writers were there at the time and so must be in a good position to know. (I wouldn't put it any more strongly than that — I'd.)

Apologies of nothing, can anybody tell me when Xmas day was first celebrated as a holiday, as several of my ancestors have been baptised, married and even buried on 26th December.

Dennis Greenacre  
12 Farley Coppin  
Southwam  
Hants RG3 8SG

## Apology

The "Blockbuster" ad should not have appeared in the May issue. Our sincere apologies to anyone who was inconvenienced by this mix-up, not least to Microdeal themselves.



# News desk

If you have any new products for the Dragon — software or hardware — ring the News Desk on 01 437 8333

## Your Dragon — The Future

NOW THAT Dragon User is appearing in its exclusive newsletter form, we asked some of the Dragon's staunchest supporters how they see their future with the beast. Will the 50,000 Dragon-keepers in Dragon User's regular and occasional audience, provide enough enthusiasts to prevent this respected but beleaguered machine from falling below critical population levels as a commercial proposition?

CompuShare's Ted Oprechal hit the nail on the head. "We're still making money out of the Dragon. We're keen on seeing it survive. It's the only popular 5800 machines in the UK, and it's strengthened our position in schools and colleges, so we shall continue to support it for as long as we can."

"But we're for serious users at the upper end of the market now. I think games players will be less well-served. We've sold hundreds of Dragon Plus units at £100 a unit, but I can't see where else they can go after the Dragon Plus. I can't see the Hard Disk Drives becoming

truly popular until hard disk prices come down, which is some way in the future."

"There's going to be a spare-parts shortage. We've run out of replacement transformers — there are no more, so tell everyone to make sure all their leads are properly secured, and the connectors in the right way round. We lose money on repairs, and now we are running out of parts."

Has he heard from Eurocard in Spain?

"They've closed their Madrid premises and withdrawn to their factory. We had a 1989 price list, but importing prices just are not economic. I can't get through to anyone there. But it's not all that gloomy — the Dragon has been around for two years longer than anyone predicted, and we're going on with it."

John Balise of Baby Software, and Jerry Pope of Microdeal were both emphatic that, despite Ted Oprechal's predictions, they had plenty of new games coming along, and Dragon user subscribers



would be hearing about them pre-release as usual. "I've been telling people that Dragon User won't be on the news-stands," said John. "Some of them are a bit peeved about what's happening." All is explained on this month's front page. Jerry reminds everyone again that Microdeal are organising the 6800 Show at the Royal Horticultural Halls in Victoria, London, on 20th November. More information from Microdeal on 0738 68000.

Less happy news came from Melbourne House — especially for Dragon User subscribers in the April contest. Melbourne have sold up their stocks of Enter the Dragon, and won't be releasing the

game. But they hope to retrieve some copies for the remaining winners.

Problem-solver company SolbasePanner Ltd are still struggling to sort out their backlog of customers with Total Disaster problems, according to the Birmingham Consumer Service. Some users have received replacement games, but are still having trouble with the program. "The company simply ran into difficulties which it didn't foresee," says the man from the BCC. What a tragic end to a good idea.

## Practical Programs

PRACTICAL programs for small businesses are the new speciality of Warrington software publishers Buzz Software. They are offering an information pack on their software, plus a discount of £1.50 on the 5.8i packages, until 21st July, 1989. Most of the 5.8i range can use one another's data files, and are priced at £3.

For information send a 17p stamp or SAE to: Simon Goodwin, Buzz Software, 15 St Stephen Road, Penketh, Nr Warrington, Cheshire WA6 2AN.

## Convention Report

THE FIRST 6800 convention was held on Saturday and Sunday the 6th and 7th of April in the entrance hall of the United Buildings in Manchester. Most of the regular exhibitors were present, and several guest speakers were invited.

The speeches on Saturday included a very light-hearted talk by Alan Oprechal of CompuShare on the subject of Fax against OS-9, a very well-received talk on programming techniques from Gordon Tait (who, incidentally, runs a cheap and efficient repair and upgrade service on 050-982 3725), and an absolutely excellent speech by Keith Rose of Modern House.

Sunday arrived under an atmosphere of disappointment from the companies who, on the whole (ie, apart really from Microdeal) were not selling as much as they had hoped. Most of them said that they

would attend the next convention, but that they could sell more in one day in London than in two months at Watford, is a rubish.

The show's atmosphere was in its element when the floor was opened to general discussion — a very obvious spirit of co-operation is a difficult situation (as unfortunately is that of the Dragon) to be seen.

Two awards were presented, the Broken Google to an embarrassed Roy Coates, and the Program of the Year award, which was given to Microdeal, rather unsurprisingly, for Shocktopper.

And that was it. Disappointment for the companies, but for the crowd a communal enjoyment.

I thought this convention was an improvement on the previous shows and would like to see it in London, soon .... but if you disagree, you know the address.

J.Q.

## Suck it and see

HOUSEKEEPING is all part of a programmer's routine. Now there is a Mini-vacuum cleaner to help out with house-keeping of the traditional kind, in and around the hardware. The battery-operated Mini-Vac will either suck up dust and fluff into its bag, or blow loose dirt

away. There is a choice of straight or curved vacuum pipe, and all-purpose or low-quality brush. Useful for anyone who does repairs or other inside work.

Mini-Vac costs £11.95, including VAT and postage, from Authorisat, PO Box 346, Wuxue Park, Surrey KT4 7YH, or from specialist hardware stores.





# Communication

Send in your queries, requests, and pleas to Communication, Dragon User, 12-13 Little Newport Street, London WC2

**Problem:** Can anyone give me a routine dumping the Hercules an to a Smith Corona Pictant 80, or the suppliers of memory maps?

**Name:** Mark Trington  
**Address:** 10 East Bank, Gelsay, Chichester, West Sussex PO20 0BP.

**Problem:** Can anybody tell me where I can obtain the memory map or firmware for the Delta DOS system? (Premier did produce a manual.)

**Name:** Andy Jackson **Address:** 24 Burnwood Drive, Wollaton, Nottingham NG8 2DU

**Problem:** I have just bought a Dragon 32. There isn't much information about it in Sweden. Can anybody tell the please: Is there any debugging memory map, with a useful ROM routine address, to buy? Is there a layout of the computer with information about signals on the user port?

If interrupts are vectored through the RAM, so you can work multitasking?

Is it possible to change character colour or use more than one colour at a time in character

mode and highest resolution with assembler (debugging)?

**Name:** Janen Larsson  
**Address:** Hamnagatan 12, 48185 Träffhagen, Sweden.

**Problem:** Could you please tell me if there is a book for graphic adventures for the Dragon 32. If there is, how much it costs and where I can purchase it. I am trying to write my own programs and feel they would be more interesting if I could include graphics.

**Name:** David Penman  
**Address:** 80 Dean Road, Allea, Scotland FK10 2JP.

**Problem:** I have a Curneta disk drive with Premier Delta DOS. Can anybody tell me give me the jump addresses for the various commands, eg. Load, Save, Chain, etc? Also, can anyone help with locating the Dragon error trapping routine, as I want to modify the system when an error occurs.

**Name:** Trevor Haddrell  
**Address:** 12 Mendall Close, Shalfleetbury, Dorset SP7 8ZF.

**Problem:** I recently bought a Dragon DOS Disk interface and a Curneta CDS08 drive for my Dragon. If possible I would like to have the entrypoints

with the conditions to enter the routine and the way they leave them, for the most useful machine code in the Dragon DOS.

**Name:** Dany Finay **Address:** Denardijewstraat 53, 8000 Brugge-4, Belgium.

**Problem:** Could someone please send me some more information other than that in the manual about the Dragon Tandy speech sound cartridge by Radio Shack.

**Name:** Tammy Larimer  
**Address:** 443 Beagat Court, Prosser, Silverdale, Pitt, Scotland KYT 4HW.

## Communication

Quick for a routine? Need some obscure equipment? Feeling out of it? Fear not — someone, somewhere can help you! Write down your problem on the coupon below (make it as brief and legible as possible) together with your name and address and send it to Communication, Dragon User, 12-13 Little Newport Street, London WC2H 7PP. We'll publish it as soon as we can — meanwhile, maybe there's someone who can help this month!

**Problem:**

.....

**Name:**

**Address:**

.....

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DOS/86/11 (to transfer) price the same as above £18.00.

**DOS** — for 16-bit DOS/86 (cassette) — see DOS/86 (cassette) £18.00  
A comprehensive reference package for all current information storage and retrieval. DOS/86 machine code to maximum speed and storage capacity. Powerful search, edit, and output facilities. The tape version is a comprehensive DOS/86/11 (to transfer) price the same as above £18.00.

**A PROGRAMMER'S GUIDE TO DRAGON 808...** — This book includes details of all DOS/86 machine code, machine code, and much more on p&p £18.00.

## AMATEUR RADIO SOFTWARE

By well-known and famous amateurs. Also includes a copy of Reception at 800V, 800V, 800V, and other topics in communications and good news.

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**2 Beacon Close, Bedford**  
**East Sussex, BN23 3JZ (0233) 99979**

## Underwater

**Program:** Aquanaut 421  
**Supplier:** Microdeal  
**Price:** £3.95

THE first of the three new Microdeal releases under the sea this issue is this adventure which is set underwater. The game starts on the ocean surface (you dive and start hunting around when your raft is sunk by an underwater explosion. You go off to investigate and find yourself in an underwater complex trying to save the place from a watery demise.

Reading in mind that you're doing them a favour, the security forces are particularly unhelpful, indeed there are two sets of them and if you're not very quick on the joystick, you'll

get sent back to the entrance again!

I say quick on the joystick because this is a most unusual adventure in many ways. The graphics (the game is split screen—top half for graphics, bottom half for text) are very unusual in their style although they do have a certain clarity after the player is accustomed to them. The game runs like an adventure, with the very useful facility of being able to move with the arrow keys (a la *Sonygi*) but suddenly on arrival at certain locations the player is required to play a very simple arcade game to progress. No doubt this will annoy some people but I found it refreshing and the games have the advantage of being solvable, unlike a game that has been completed there is very little problem in doing it again and



again first time.

The adventure is not particularly difficult to solve but is very good fun to play. Especially pleasing is the section involving finding a robot called Huey! It's a couple of afternoons relaxed thought to solve this one and I can recommend it as an introduction to adventuring and Map-making, as it's fairly straightforward.

This is the sort of adventure I could quite easily play while sunbathing! It has that really nice relaxed edge which comes from it being set in an original environment. As you may have guessed, I like it.

Jason Chisum



## Timely

**Program:** The Vortex Factor  
**Supplier:** Microdeal  
**Price:** £3.95

THIS is the other new adventure from Microdeal and is by the Teutobor team which stands as an indication of its quality. Where Teutobor was about space travel, this one concerns itself with time travel and is, again, a very good game.

I haven't finished it, would you believe I need a light flap, that is (cheerful of a problem is in there, and I can't find a solution to it, yet, it's harder than *Aquanaut*, about the same standard of difficulty as Teutobor in fact, so if that was your level you'll enjoy this one.

most of the stuff you need to get started. To give a lift to those stuck right at the start try closing doors behind you and also studying a bit of Physics!

The format is standard graphics at the top (with some objects pictured) and text beneath, the vocabulary fine and the keyboard response very good.

There is no HELP option but the *SAVE* and *LOAD* work very reliably. However, there is a problem with the adventure, due to what can only assume are as American origins. By

stating the problem I could be accused of giving a big due to the adventure but it is unfair that one of the key objects cannot be reached until it is realised that in nineteenth-century America, while their dates month, then day, then year, is 17/05/88 would be 05/17/88 in American format. I hope I haven't spoiled a part of the adventure for those struggling but I wish, to be quite honest, well annoyed when I finally cracked it as I feel that an adventure should have everything within it necessary to

solve it and should not rely on pieces of trivia. For the solution to the problem in question I'd like to publicly thank a friend of mine although I have no idea how he knew about it.

To sum up then, another good adventure, named only by the above mentioned problem, and one to which I shall be returning until I finish it. I hope the team produce more adventures, and soon!

Jason Chisum



## Mountains

**Program:** Remmel 3-D  
**Supplier:** Microdeal  
**Price:** £3.95

IF THERE'S a sort of game I love releasing above any other is arcade copies. The thing is, everyone knows what sort of game they are, all I have to say is "Battacore" or "Remmel's Revenge" and I've saved myself two paragraphs of copy describing the game, and all that remains is to comment on its quality as a copy, and give it a rating.

At the 1988 convention John Syme said to me that this game was simply better than "Remmel's Revenge" and he said it wasn't he wouldn't have put it out.

The trouble is, I don't think it

actually is better than "Remmel's Revenge". Yes, it's faster, and yes there are mountains (one of my gripees at the former was for its lack of mountains) but the game simply doesn't have the right feel of the original and "Remmel's Revenge" has it.

Remmel 3-D is more refined and is by any standard a good game: it offers a choice of colours—yes, you can play this one green on black!—and the controls are slightly better. The problem is it's too fast. It has turned what was originally a tactical battle game on a field, a tense session of guerrilla seek and destroy, into a wham-bam-boom of moving game.

The game also has to provide all of the enemies of the arcade. It offers tanks, planes and super tanks. I don't know if the planes are the missiles or

saucers of the original as I've never lasted long enough to see one—the game is done fast and the tanks are deadly! No doubt The Expert has blasted his way into the millions on it by now and will inform us all through his next column what they are. (Incidentally, word has reached me that someone thinks I am The Expert, can I state here and now that the day my English degenerates to his level I shall pack up writing altogether!)

So, the game is good, and if you find "Remmel's Revenge" boring this could be the version you want but if you want a prettier copy of the arcade game this isn't the one!

Jason Chisum



The game starts with you in a mansion full of interesting exhibits, a quick scroll round, examining everything (more than once as has now become a tradition) and you'll have

# Down The River

*M. Croucher creates a canoe challenge.*

NOTHING like paddling about in boats. And Canoe is ... an ideal trip on a wet afternoon. You don't have to unpack your kayak, just type in the BASIC loader and here listings, load and launch.

First, enter the BASIC hex loader, and when complete, type RUN to begin.

The data is split up into eight blocks, and displayed on screen in the block number and address. Type in the relevant line of data and the computer will display after every two digits have been entered, so there is no need to enter them separately. The last number is a check sum and this should be entered after the ? prompt. If an error has occurred then the address will be displayed again and the line of data will need to be re-entered.

When all the data has been entered the program will be saved to tape, ready for you to use. A copy on tape is available from M. Croucher, 14 Hillingbury Road, Prospect Farm, Haslem, Hants PO8 8BL, price £2. If eight blocks of data seems like a lot of typing.

Use LOADM to load the program. Once loaded, type EXEC to start the game. You have a choice of red or green canoes. For users with black and white TVs, a green canoe only is recommended.

The objective is to paddle your canoe as

fast as possible, trying to get through the gates without touching the marker flags. If you reach the finish line in the time allowed you can proceed to tackle the second river, on this river, beware of the banks and rocks as these will sink your canoe. You have three canoes to travel as far as possible.

A bonus point is awarded for each gate successfully negotiated, but all bonus points are lost if a flag is hit.

The right joystick is used to control the canoe. Moving it from right to left will move the canoe forward. Trying to paddle too fast will result in the canoeist getting tired, and the canoe will go out of control.

The time allowed, and the distance between the gates can be changed with the following codes:

POKE \$H2115,No

POKE \$H43A7,No

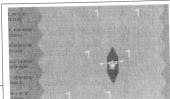
Where No is the distance required between the flags. 0<No<128. Default setting is 64.

POKE \$H4735,No

POKE \$H473A,No1

Where No and No1 are the first two digits of the time required. Default setting No=1, No1=2.

Once finished, press any key to start a new game.



```

10 POKEAR 1
20 CLEAR 200,5H20FF
30 FOR BL=1 TO 8
40 READ ST,EN
50 CLS:PRINT "      HEX LOADER" :PRINT "--CANOE-- BLACK",BL
60 FOR ADD= ST TO EN STEP 10
70 PRINT HEX$(ADD):CD=0
80 FOR IX= 0 TO 9
90 GOSUB 200:POKE ASD+IX,VAL("5H"+BX)
100 CD=CD+VAL("5H"+BX)
110 PRINT " ",":NEXT:PRINT:INPUT A$
120 IF VAL("5H"+A$)>CD THEN SOUND 200,3:PRINT "--ERROR-- REDD:";CD TO 70
130 NEXT:PRINT
140 CLS:PRINT "SET UP CASSETTE AND PRESS ANY KEY"
150 IF INKEY="" THEN 150
160 CLS:PRINT "NOW SAVING CANOE!"
170 CSAVE"CANOE",5H2400,5H5018,5HAA00
180 PRINT :PRINT "CANOE SAVED BYE"
190 END
200 A$=INKEY$:IF A$="" THEN 200
210 IF (A$>"9" AND A$<"A") OR (A$<"0" OR A$>"F") THEN 200
220 PRINT A$;B$=A$
230 A$=INKEY$:IF A$="" THEN 230
240 IF (A$>"9" AND A$<"A") OR (A$<"0" OR A$>"F") THEN 230
250 B$=B$+A$
260 PRINT A$;
270 RETURN
280 DATA 5H2400,5H2F2E,5H3000,5H3805,5H3900,5H382B,5H40C0,5H41AF,5H4300,
5H4723,5H4A00,5H4C98,5H4D00,5H4E88,5H4F00,5H5017

```

**Table 1**

[illegible]





# Data Block 7

40000	000,000,000,000,000,000,000,000,000,000,000	40001	000,000,000,000,000,000,000,000,000,000,000	40002	000,000,000,000,000,000,000,000,000,000,000
40003	000,000,000,000,000,000,000,000,000,000,000	40004	000,000,000,000,000,000,000,000,000,000,000	40005	000,000,000,000,000,000,000,000,000,000,000
40006	000,000,000,000,000,000,000,000,000,000,000	40007	000,000,000,000,000,000,000,000,000,000,000	40008	000,000,000,000,000,000,000,000,000,000,000
40009	000,000,000,000,000,000,000,000,000,000,000	40010	000,000,000,000,000,000,000,000,000,000,000	40011	000,000,000,000,000,000,000,000,000,000,000
40012	000,000,000,000,000,000,000,000,000,000,000	40013	000,000,000,000,000,000,000,000,000,000,000	40014	000,000,000,000,000,000,000,000,000,000,000
40015	000,000,000,000,000,000,000,000,000,000,000	40016	000,000,000,000,000,000,000,000,000,000,000	40017	000,000,000,000,000,000,000,000,000,000,000
40018	000,000,000,000,000,000,000,000,000,000,000	40019	000,000,000,000,000,000,000,000,000,000,000	40020	000,000,000,000,000,000,000,000,000,000,000
40021	000,000,000,000,000,000,000,000,000,000,000	40022	000,000,000,000,000,000,000,000,000,000,000	40023	000,000,000,000,000,000,000,000,000,000,000
40024	000,000,000,000,000,000,000,000,000,000,000	40025	000,000,000,000,000,000,000,000,000,000,000	40026	000,000,000,000,000,000,000,000,000,000,000
40027	000,000,000,000,000,000,000,000,000,000,000	40028	000,000,000,000,000,000,000,000,000,000,000	40029	000,000,000,000,000,000,000,000,000,000,000
40030	000,000,000,000,000,000,000,000,000,000,000	40031	000,000,000,000,000,000,000,000,000,000,000	40032	000,000,000,000,000,000,000,000,000,000,000
40033	000,000,000,000,000,000,000,000,000,000,000	40034	000,000,000,000,000,000,000,000,000,000,000	40035	000,000,000,000,000,000,000,000,000,000,000
40036	000,000,000,000,000,000,000,000,000,000,000	40037	000,000,000,000,000,000,000,000,000,000,000	40038	000,000,000,000,000,000,000,000,000,000,000
40039	000,000,000,000,000,000,000,000,000,000,000	40040	000,000,000,000,000,000,000,000,000,000,000	40041	000,000,000,000,000,000,000,000,000,000,000
40042	000,000,000,000,000,000,000,000,000,000,000	40043	000,000,000,000,000,000,000,000,000,000,000	40044	000,000,000,000,000,000,000,000,000,000,000
40045	000,000,000,000,000,000,000,000,000,000,000	40046	000,000,000,000,000,000,000,000,000,000,000	40047	000,000,000,000,000,000,000,000,000,000,000
40048	000,000,000,000,000,000,000,000,000,000,000	40049	000,000,000,000,000,000,000,000,000,000,000	40050	000,000,000,000,000,000,000,000,000,000,000
40051	000,000,000,000,000,000,000,000,000,000,000	40052	000,000,000,000,000,000,000,000,000,000,000	40053	000,000,000,000,000,000,000,000,000,000,000
40054	000,000,000,000,000,000,000,000,000,000,000	40055	000,000,000,000,000,000,000,000,000,000,000	40056	000,000,000,000,000,000,000,000,000,000,000
40057	000,000,000,000,000,000,000,000,000,000,000	40058	000,000,000,000,000,000,000,000,000,000,000	40059	000,000,000,000,000,000,000,000,000,000,000
40060	000,000,000,000,000,000,000,000,000,000,000	40061	000,000,000,000,000,000,000,000,000,000,000	40062	000,000,000,000,000,000,000,000,000,000,000

# Data Block 8

40063	000,000,000,000,000,000,000,000,000,000,000	40064	000,000,000,000,000,000,000,000,000,000,000	40065	000,000,000,000,000,000,000,000,000,000,000
40066	000,000,000,000,000,000,000,000,000,000,000	40067	000,000,000,000,000,000,000,000,000,000,000	40068	000,000,000,000,000,000,000,000,000,000,000
40069	000,000,000,000,000,000,000,000,000,000,000	40070	000,000,000,000,000,000,000,000,000,000,000	40071	000,000,000,000,000,000,000,000,000,000,000
40072	000,000,000,000,000,000,000,000,000,000,000	40073	000,000,000,000,000,000,000,000,000,000,000	40074	000,000,000,000,000,000,000,000,000,000,000
40075	000,000,000,000,000,000,000,000,000,000,000	40076	000,000,000,000,000,000,000,000,000,000,000	40077	000,000,000,000,000,000,000,000,000,000,000
40078	000,000,000,000,000,000,000,000,000,000,000	40079	000,000,000,000,000,000,000,000,000,000,000	40080	000,000,000,000,000,000,000,000,000,000,000
40081	000,000,000,000,000,000,000,000,000,000,000	40082	000,000,000,000,000,000,000,000,000,000,000	40083	000,000,000,000,000,000,000,000,000,000,000
40084	000,000,000,000,000,000,000,000,000,000,000	40085	000,000,000,000,000,000,000,000,000,000,000	40086	000,000,000,000,000,000,000,000,000,000,000
40087	000,000,000,000,000,000,000,000,000,000,000	40088	000,000,000,000,000,000,000,000,000,000,000	40089	000,000,000,000,000,000,000,000,000,000,000
40090	000,000,000,000,000,000,000,000,000,000,000	40091	000,000,000,000,000,000,000,000,000,000,000	40092	000,000,000,000,000,000,000,000,000,000,000
40093	000,000,000,000,000,000,000,000,000,000,000	40094	000,000,000,000,000,000,000,000,000,000,000	40095	000,000,000,000,000,000,000,000,000,000,000
40096	000,000,000,000,000,000,000,000,000,000,000	40097	000,000,000,000,000,000,000,000,000,000,000	40098	000,000,000,000,000,000,000,000,000,000,000
40099	000,000,000,000,000,000,000,000,000,000,000	40100	000,000,000,000,000,000,000,000,000,000,000	40101	000,000,000,000,000,000,000,000,000,000,000



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# Choosing a Disk Drive

*A disk drive is a major investment — plan before you buy, advises Geoff Enridge.*

DUE TO the demise of the Dragon as a games machine, many loyal users may be tempted to buy disk drive bargains appearing in various computer magazines. However, there is more to it (bargain than the price) factors such as the suitability of the equipment to perform the tasks required of it, availability of software and its compatibility with other systems must also be considered. This is where the enthusiastic amateur can become unstuck through lack of knowledge. There is little written information and what is available tends to be in the form of snippets in articles or advertisements. There is then a need to collate and present the pieces of information gleaned from these various sources to help the less well informed among us to make a more objective choice. Judging by the standard of articles in *Dragon* User many readers may find this contribution simplistic, but then we all need some light reading from time to time!

## The System

There are three parts to a disk drive system to be considered:

- (a) The disk drive.
- (b) The disk operating system (DOS).
- (c) Software.

Although I will consider each separately, the system as a whole needs to be designed and evaluated against the particular tasks that it will be expected to undertake.

Before looking at disk systems it is wise to ensure we appreciate the benefits of disks over cassette tapes for storing data and programs.

- (a) Files are read and written to disks far faster. A disk rotates at 360 rpm.
- (b) As files are stored in concentric rings on disks it is possible to directly access files, whereas a tape needs to be subsequently searched.
- (c) A disk system writes and keeps a catalogue or directory of the files on each disk.

The disk system therefore comes into its own when considering the handling of data files. Everyone who has attempted to use cassette data files has probably experienced errors arising from the slow acceleration of the tape record or the tedium of extending the duration of the leader tone. No such problems with disk drives. Different files of data can be accessed quickly and if the data was written to disk as a random file it is possible to jump around the file for specific items. This type of random

access file allows for parts to be updated, whereas a cassette data file would need to be totally re-written.

The simplest analogy for comparing disk and tape storage is to compare an LP with a music cassette. Once a track on an LP has been chosen the arm can be moved directly to that track. When another track is required the arm can be moved to the new location. It is difficult to perform the same regime with a tape as it is difficult to identify where one track ends and another starts. Although the higher speeds of fast forward and rewind can be used to move to a new track, the tape still needs to be sequentially searched.

Now for some definitions. A disk can be single or double sided and can be either single or double density. (Cloud density is also available but I have yet to see any suggestion that it can be used on a Dragon system.) The number of sides needs no explanation except that to confirm that a double sided disk can store files on both sides so long as the disk drive being used is capable of such a task. The density of a disk affects the amount of data that can be stored on the disk. The greater the density (the closer the information can be written on the disk) and consequently the more data it can store.



Before a disk can store data it needs to be 'formatted'. This uses some of the storage capacity of the disk, so it is advisable when comparing two different systems to ensure that the formatted capacities are compared. The formatting of the disk results in it being divided into tracks and sectors. The disk operating system (the DOS) also writes essential information on the disk which will be used by the drive to find the desired programme or data file when the system is used. With the tracks and sectors numbered and a Data Catalogue or

Directory on the disk the drive can move quickly to the locations where the data is stored.

Each DOS system will format a disk differently, affecting the capabilities of various systems. The formatting of a disk also erases all data stored on it. It is therefore not possible to re-format a disk for another DOS without losing your data or files. How to consider the three principle parts of a disk system: The drive, the operating system (DOS) and the software.

## The Disk Drive

The task of the drive is largely self-evident from the above. It needs to rotate a delicate piece of material, the disk, at high speed and to be able to read and write data on it at very precise points. The drive is therefore a precision instrument. This needs to be remembered when considering the purchase of a second-hand machine. A drop, or hurried explosion by an inquisitive user, could have caused damage which could be expensive to rectify. Before purchasing a second-hand disk drive, see the system format a disk, write data to it and read it.

Some drives such as Dragon drives are only able to use one side of a disk. Double sided disks can be used in the drive but only one side will be used. This effectively halves the amount of information that can be stored on the disk. Double sided drives such as some of the Cumbria models are able to use both sides of the disk but some problems can arise as a consequence of the DOS which means the double sided capacity cannot be used. This will be considered below under disk operating systems but generally this is not a great hindrance if the 'double sided' drive is able to format a single sided disk when required. Again the watch word is to check and if the system is able to format both type of disk then the versatility of the drive is enhanced.

When formatted, a disk is divided into tracks. The standard choice is either 40 or 80 tracks per disk, the 80 track offering twice the storage capacity of a 40 track disk. The number of tracks that can be formatted on a disk is dependent on the characteristics of the drive, the DOS and the disk. Even if the disk and the DOS is double density a 40 track disk will not be able to format or read an 80 track disk. As most software is sold on 40 track disks it is important to check that an 80 track drive is able to read a 40 track disk before it is purchased.



To have the best of both worlds, high storage capacity plus being able to use a range of software it is possible to find drives which are 40/80 switchable. The only problem posed by such drives is that the operator must remember to switch between modes for the differently formatted disks. Another solution could be to check that the software houses you use have the capacity to reformat their 40-track software on 40/80 track disks if requested.

Whether to purchase a single or dual drive is a decision based on expense rather than the primary task that the disk system is required for. There are various systems on the market and to make a choice purely on cost could result in undermining the usefulness of your disk system. By having a dual system it is possible to designate one drive as a 'system' drive which will read the software being used while the other could be the 'work' drive which would store the data being used. A simple example is to consider a word processing package. The first drive could contain the program being used plus ancillary files such as a spell check while the other could hold files of documents that have been, or are being, prepared.

If a real amount of storage space is not required it is maybe more convenient to operate with two single sided than one double sided drive.

## Disk Size

The final aspect of the drive I propose to consider is the size of the disk. Mike Jones (*Computer Age*, January 1986) examined yet another scourge of home and business users alike, INCOMPATIBILITY. There are currently three main sizes of disk at present, 5 1/4 inch, 3 1/2 inch, and 3 inch. Because of improved disk technology all three sizes hold approximately the same amount of data. The 5 1/4 inch disk is 'floppy'; the casing is not rigid and the disk is vulnerable to damage through exposure at the readable slot. The 3 inch and 3 1/2 inch disks are encased in a more rigid cover and their read/write slots are protected by a shutter which is opened as the disk is inserted into the drive. Some 3 1/2 inch drives are compatible with 5 1/4 inch disk operating systems but again the watch word is to check the compatibility before purchase as the design of the drive may be different, it may rotate the disk at an incompatible speed.

Making the choice of disk size is difficult, with much conflicting advice. The smaller disks are more solid but this could result in insufficient tender loving care being given, enhancing the risk of damage. Mike Jones after discussing the relative merits of the different size disk felt that the 3 1/2 inch format held the most promise for longevity of lifetime.

As for all Dragon users are concerned, Dragon User (September 1985) reported that Eurohardw are planning to extend the range of Dragon disk drives available from the present single sided 40 track format. Unofficial changes that are proposed to the stage Eurohardw are reported as intending to remain with the 5 1/4 inch disk.

If you propose to purchase a drive other than a 5 1/4 inch check on the availability of software. Check also, if you are not purchasing a total package, that the drive is compatible with the disk operating system you proposed to use.

## Operating Systems

Disk Operating Systems (DOS) appear to (1) ROM systems which interface with resident BASIC by using disk handling commands, ie Dragon, Delta and Cumana systems.

(2) ROM systems which replace the ROM BASIC of the Dragon with a totally new system, ie the Plus System of Andtek Data Design.

(3) Software-based systems such as FLEX and GDS.

The ROM-based systems offer, to a varying extent, facilities beyond those necessary for a disk interface by adding some utilities to BASIC. For instance Cumana and Dragon DOSs add such commands as AUTO for automatic line numbering, a BEEP command and WAIT to introduce a pause in a programme, a useful alternative to FOR/NEXT loops. These additions are handy sufficient reason to purchase the system, but represent 'a little candy'.

The Andtek system, however, makes significant changes to the way the Dragon performs by adding new commands and enhancing the screen display with green on black and 80 columns. (See Dragon User, November 1985 for a review.)

The software systems require a ROM system to be loaded. The ROM DOSs must have a 'BOOT' command or equivalent which will load sectors of the disk which then takes over the operation of the system.

The software systems are expensive but FLEX and GDS are extremely professional and sophisticated making the operation of the ROM system much more handy. They also offer a 'easy in' to serious software packages.

It is not necessary to have FLEX or GDS to use your disk system seriously but powerful software has been written for both these systems so identify the prime tasks you wish to use your disk system for, find the software which will meet them and this may then indicate one of these systems are necessary.

If FLEX is chosen a Dragon 64 is necessary unless the PLUS cartridge mentioned above is used which is able to run FLEX on Dragon 50. An aspect of FLEX which may be attractive is that software that runs with FLEX will run on any machine which uses it, for instance the BBC. For reviews of FLEX see Dragon User, February 1985 and September 1985.

## Software

A problem which may crop up if using Cumana or Dragon DOS is that it is unable to 'BOOT' a double sided disk. This should not pose any problems, so long as you remember to format a single sided disk when constructing a new system disk. Unless you are a skilled and addicted

programmer without interest in software produced by others you will need to be sure that the desired software is available for the system you propose to use. Most games and serious software appears to be available for Dragon and Delta DOSs. More recently Cumana DOS has increased its profile since it switched from Delta DOS to providing their own with their drive. Jason Orsman, Dragon User, February 1986, reported from the 8609 show that Cumana DOS is not true Dragon DOS although it is compatible with it. This would suggest that software that will run on Dragon DOS will also run under the Cumana system. However, check your version of Cumana DOS, the V2.0 appears to be more compatible than earlier versions. Again, as there is no effective antidote to incompatibility it is advisable to ask and perhaps check for yourself the compatibility of the software and the DOS that you are using or propose to purchase.

Pre-purchase research is never a waste of time when considering the cash (or credit) investment you may be making. There is no point in buying a 3 1/2 inch drive, even if it is compatible with a 5 1/4 inch DOS if software houses only supply their programs on 5 1/4 inch disks.

The cost and availability of software needs also to be taken into account. For instance, there is more software available to run with FLEX. However a recent advertisement carried in DRAGON USER May 86 offered GDS software at very competitive prices compared to the recommended retail price.

## Conclusions

It is a sad reality that Dragon support could become extinct in this country. The precarious economic environment in which the small computer firms operate is such that their demise could one day sound the death knell for others. There is therefore some wisdom in investing in equipment and software that can be used with other computer systems should this become necessary. Without cheating at the combinations, which is not realistic because of the large number it is possible that inaccurate, inappropriate and biased advice could be obtained. But questions such as 'will the disk drive operate with the DOS of another computer?' or 'will software that runs under Dragon FLEX operate with FLEX on other systems?' may offer some enlightenment which could help you ensure your investment could be partly salvaged should the Dragon (sadly) its last day breath.

Throughout the 'Thomas Cook' tour through disk drives and ancillary subjects the advice that should be evident is to take a holistic approach. Identify the tasks you predominantly wish to undertake, look at the software and what it requires, and so far as possible look into the future to ensure you are not investing in obsolete equipment. Lastly, question, check and observe before parting with hard earned cash so that when you are 'all hooked up' all systems are ready to go.

Good luck for successful bargain hunting!

If you've got a technical question write to Brian Cudge. Please do not send a SASE as Brian cannot guarantee to answer individual inquiries.

## Dragon Answers

### Error

I HAVE a Dragon 32 and a Star printer. I was playing with them when a message came up: 'DIS DRIVER. I loaded it up on my list, but I couldn't find an explanation. Could you help please?'

Daniel Lattimore  
29 Oak Street  
Lindley  
Huddersfield  
West Yorkshire  
HD3 3LS

THE 'DIS Error' stands for 'Diskette Number Error' and occurs if the channel number given to an OPEN, CLOSE, PRINT or INPUT command is invalid (ie if it is not -2, -1 or 0). Unfortunately, this error is not noted in the Dragon manual.

If you have a disc drive, then the error can also be caused by entering an invalid drive number.

### Extra Poke

I AM currently writing an adventure game for my Dragon 32. However, I have done run out of memory and the game is uncompleted. I remember a POKE in a magazine which gave the user an extra 65. Could you tell me this POKE, and whether or not it needs to be entered before loading?

David Updalen  
4 Vito Road  
Chalfont  
Glos  
PL10 6GJ

THIS is one of those questions that come up more regularly than others on this page. The POKEAR command can be used to reserve and release RAM used for the graphics module. Typing POKEAR 0,1 POKEAR 1 will release all but one graphics page and allow the RAM to be used for your basic programs. Unfortunately, it's not possible to enter POKEAR 0 as this returns an error.

However, it is possible to achieve the same effect as POKEAR 0 by typing the following:

POKE 16, POKE 100; POKE POKE (100) - 255, 0; END

This will take into account if a disc drive is attached and should be entered before loading any program that is to use the extra RAM.



### On/Off

I HAVE two programs which run lengthy routines during which I want to switch off the TV set with my Dragon 32. I intend to construct a small audio amplifier so that I can still use audio signals to indicate completion of the process.

I know that the audio signal is available from the monitor socket, but is there any DC available at a socket or must I build a separate power supply for the amplifier? If DC is available, at what voltage? Can you also please tell me the audio signal level at the monitor socket?

G. T. Denton  
12 Falconwood Road  
Ashtedon  
Droydon  
CR2 9BB

THERE is no power source available at the monitor socket; however, you can get +5V on pin 5 of the joystick ports, and pins 3 and 4 of the Centronics port. The audio signal at the monitor socket conforms to the normal DIN standard.

### Scroll

I HAVE been trying to write a machine-code routine to scroll the PMODE 34 screen horizontally. I have tried two obvious methods:

- 1) POKE PBL . . . (too slow)
- 2) Moving the screen byte by byte (too tricky)

Please could you tell me how the fast, smooth scrolling effect in games is achieved?

P. A. Charles  
Froghfields  
788 Edingburgh Road  
Sarnford  
Lincs PE9 3JZ

THERE are a number of different ways of fast scrolling the video screen. The one I favour is word scrolling synchronised to the frame flyback.

You should write a routine to scroll the screen horizontally a byte at a time (moves 16 bits at once using the 'B' register for speed), but wait for the frame flyback pulse before each write word. This is achieved by waiting for bit 7 of DFFB to change. The result is fast and reasonably smooth horizontal scrolling.

### Printer

I HAVE a Silver Reed Colour PenGraph Model E258 with a built-in Centronics interface. Unfortunately when the PenGraph is connected to my Dragon 32 and is in PRINTER mode (on-line), it responds to the depressing of certain keys on the Dragon keyboard without any command such as PRINT or C being input to make it do so. This only happens with four keys, namely 5, 6, full-stop and hyphen, plus the Shifted versions of these same keys. When 5 or hyphen is pressed, a space is printed out by the PenGraph. When 6 or full-stop is pressed, the symbol @ is printed out either once or twice randomly. Any other key pressed immediately after one of these four keys may cause a repeat of the space or @ symbol being printed out. Can you tell me why this should happen?

Mike Whitstone  
50 Thornham Road  
Sarnford Castle  
Co. Durham

THE same PM port is used for both the Centronics printer interface and for reading the keyboard. Whenever the keyboard is read the values on

the data lines of the printer port will change. However, the printer should not respond to this as the 'printer' line will be high. The printer will only print the character at the port when it is 'strobe'd' (the strobe line goes low then high).

Your problem seems to be with this strobe line. The most likely cause is the printer lead. I suggest you test the lead with another printer before suspecting the computer or printer.

### Video

I AM attempting to write an article, ultimately for submission to Dragon User, about the use of the video recorder for saving programs from computers. At present the video and audio are fed into the video from the 'monitor' socket. A game, for example, can then be recorded on the video as it is played.

Using the cassette socket, the audio output/CAVE feeds to the 'audio dub' input on the video, and is fed back on CLAUD from the audio output DRI socket on the rear of the video. The recorded picture can then be viewed back in the beginning and the program CAVED onto the sound channel.

All the while wishing to load a game then needs to do is to 'SEARCH' through the video tape until he sees his game and then CLAUD it into the computer.

The problem is that many video machines do not possess an 'audio dub' facility, so what is needed is for the audio output present on the cassette socket on CAVE to be also present on the 'monitor' audio output at the same time, which is not at present. Could you kindly advise me as to whether there is a software POKE or something to redirect CAVE audio to the 'monitor' socket? I can find no mention of the 'monitor' socket in any of the literature I have at present.

Mike Brinkley  
44 Waterfall Cottages  
Mariner  
Huddersfield  
HD7 2HG

YOU can cause the CAVE input to be sent to the monitor socket by typing the following: POKE 80210, (PEEK80210) OR 8;CAVE "Bioscam"

Presumably, this would be done within a program which is displaying one of its screens at the time.



```

H=H+1 PRINT#B1;"ONE HOUR HAS BEEN AD
DED FOR LUNCH" PRINT#1 L=H
400 IF T=H THEN END
400 PRINT#1 STOP FOR NIGHT PRESS "N"
ELSE PRESS "C"
400 IF L=H THEN PRINT#1 CUT OUT LUNCH
# HOUR PRESS "H"
500 PRINT#1 NO-NO THE LOT PRESS "N"
500 PRINT#1 "NOTHING IS NOW" GOTO#1315
GOTO#1315
510 FOR#1315: IF YES="" THEN 510
520 IF YES="" THEN 540: IF YES="" THEN 540
540 PRINT#1 "THEY: THEY: GOTO#1315"
GOTO#1315
550 IF YES="" AND L=H THEN 540: IF YES=""
PRINT#1 "THEY: THEY: GOTO#1315"
560 IF YES="" THEN 560
570 IF YES="" THEN 570: IF YES="" THEN 570
H=H+1: PRINT#1
580 IF YES="" THEN 580: IF YES="" THEN 580
L=H
590 IF C=1 THEN 590: IF YES="" THEN 590
590 PRINT#1
600 IF YES="" THEN 600: IF YES="" THEN 600
600 YES=1
610 IF YES="" THEN 610
610 GOTO#1315
620 C=1: IF YES="" THEN 620: IF YES="" THEN 620
... THE NO. OF THE ROOM FROM WHICH YOU W
ISH TO BEGIN. ALTERATIONS"
630 PRINT#1 "IF YOU WISH TO C
UT OUT A TOWNSTAY ONLY NO. AS A NO
TICE: PRINT#1 "TO ENTER AN EXTRA T
OWN OR TOWN NO ONE OR MORE HUNDRED T
OWN NUMBER OF THE TOWN"
640 PRINT#1 "PRESS ENTER TO L
IST TOWNSTAY"
650 PRINT#1 "PRESS CLEAR TO F"
PRINT
660 PRINT#1 "PRESS SPACEBAR TO ENTE
R NO." IF YES="" THEN 660
670 PRINT#1 "IF YES=""
680 IF YES="" THEN 680
690 IF YES="" THEN 690
700 IF YES="" THEN 700
710 IF YES="" THEN 710: IF YES="" THEN 710
720 IF YES="" THEN 720: IF YES="" THEN 720
730 IF YES="" THEN 730
740 IF YES="" THEN 740: IF YES="" THEN 740
750 GOTO#1315
760 INPUT#1 "NO"
770 IF YES="" THEN YES=""
GOTO#1315
780 IF YES="" THEN YES=""
790 IF YES="" THEN YES=""
800 IF YES="" THEN YES=""
810 IF YES="" THEN YES=""
820 IF YES="" THEN YES=""
830 IF YES="" THEN YES=""
840 IF YES="" THEN YES=""
850 IF YES="" THEN YES=""
860 IF YES="" THEN YES=""
870 IF YES="" THEN YES=""
880 IF YES="" THEN YES=""
890 IF YES="" THEN YES=""
900 IF YES="" THEN YES=""
910 IF YES="" THEN YES=""
920 IF YES="" THEN YES=""
930 IF YES="" THEN YES=""
940 IF YES="" THEN YES=""
950 IF YES="" THEN YES=""
960 IF YES="" THEN YES=""
970 IF YES="" THEN YES=""
980 IF YES="" THEN YES=""
990 IF YES="" THEN YES=""

```

```

AT 88:1315,1315
510 PRINT#1 "DO YOU WISH TO HAVE A
NOTE OF A HOTEL?"
520 PRINT#1 "NOT SET CHosen TYPE "NO"
"
530 PRINT#1 "TOO EARLY TYPE "NO"
540 INPUT#1 "YES"
550 IF YES="" OR YES="" THEN 550
560 IF YES="" THEN 560
570 IF YES="" THEN 570
580 IF YES="" THEN 580
590 IF YES="" THEN 590
600 IF YES="" THEN 600
610 IF YES="" THEN 610
620 IF YES="" THEN 620
630 IF YES="" THEN 630
640 IF YES="" THEN 640
650 IF YES="" THEN 650
660 IF YES="" THEN 660
670 IF YES="" THEN 670
680 IF YES="" THEN 680
690 IF YES="" THEN 690
700 IF YES="" THEN 700
710 IF YES="" THEN 710
720 IF YES="" THEN 720
730 IF YES="" THEN 730
740 IF YES="" THEN 740
750 IF YES="" THEN 750
760 IF YES="" THEN 760
770 IF YES="" THEN 770
780 IF YES="" THEN 780
790 IF YES="" THEN 790
800 IF YES="" THEN 800
810 IF YES="" THEN 810
820 IF YES="" THEN 820
830 IF YES="" THEN 830
840 IF YES="" THEN 840
850 IF YES="" THEN 850
860 IF YES="" THEN 860
870 IF YES="" THEN 870
880 IF YES="" THEN 880
890 IF YES="" THEN 890
900 IF YES="" THEN 900
910 IF YES="" THEN 910
920 IF YES="" THEN 920
930 IF YES="" THEN 930
940 IF YES="" THEN 940
950 IF YES="" THEN 950
960 IF YES="" THEN 960
970 IF YES="" THEN 970
980 IF YES="" THEN 980
990 IF YES="" THEN 990

```



# Extra Graphics

*He liked the software so much — he wrote his own.  
Peter Whittaker on the Touchmaster Graphics Tablet.*

HK0890 bought a Touchmaster Graphics Tablet. I can agree with Mike Gersand that it is well worth the price of \$52.50 (Dragon User, February 1986). When I first bought the tablet, I was quite impressed with the graphics available through the Mulptaint program, but after a short while I felt that it needed improving.

The program I have written is based around the Dragon 34 with disk drive to obtain a greater resolution of 512 pixels by 384, which is better than the Apple Macintosh at 512 by 342 pixels. The program can easily be converted to work with cassette tape instead of with disks, although the machine code routines will need to be altered to take account of the different graphics screen addresses. The program will also work on the Dragon 32 with the loss of the extra big graphics screen facility.

## The Graphics Tablet

The graphics tablet is connected to the Dragon via the cartridge port, but is not pushed into Dragon Basic. There is no equivalent of the `JOYSCR` command to read the position of a pen on the pad. Instead a short program is needed to read whether the pen is pressing the pad, and if so, where. (Assembler #1: `PADCODE`.)

Unfortunately, the pad does not use the same resolution as the Dragon's graphics screen (256x192), but has a resolution of 256x256. This means that the points are not square in shape. A circle drawn on the pad will look like a squashed egg on the screen unless the X co-ordinates are suitably adjusted. The program will store the unaltered co-ordinates at `X=PEEK (4H7FC2)`; `Y=PEEK (4H7FC4)` and the modified coordinates at `X=PEEK (4H7FC3)`; `Y=PEEK (4H7FC5)`.

As listed, the program will read the pad and then set the equivalent pixel on the graphics screen to enable free hand drawing. However, by altering the code, `POKE$AV7F7457` the program will stop before setting the pixel, and the machine code routine can be used to read the position of the pen on the pad for use with other functions.

## The Main Program

Type in Listing #1, and save it to tape. If you do not have a disk drive reinserted to change all the saved routines from `SAVE A0:3072,30716,41194 to C0A0:0A A0:1526,7680,41194`. Now type in Listing #2, the machine code loader, `CL0A0:00,30000`, and then `RUN` it. Enter the start and end addresses of 32501 and 32716, and then enter the data for `PADCODE`. Type in each line of 16 digits, and then press enter. Then enter the total given



at the end of the line. When you have typed in all the data, save it to tape/disk, with `CSAVE$M "PADCODE"; 32501, 32716, 32501`. Now do the same with the `32501-DRAWEN` data, using 32341 and 32486 as the start and end addresses. You can now rewind the tape, `CL0A0`, and `RUN` the program.

When `RUN` the program loads in the code, and then displays the graphics screen while the various variables are initialised. When the program is ready, the top left corner of the screen will be inverted, and then restored. (Back to white and back again.) This inverted area of the screen refers to the area of graphics memory currently being addressed by the pad.

Unlike Mulptaint, the program is controlled from the keyboard, since the whole surface of the graphics tablet is used for drawing. Each time a key is pressed, the current screen is locked up to graphics pages 5 to 8. This allows for the inclusion of an `Openroutine`, called by pressing the `-0-`, which will delete everything entered since the last key press, and help to correct any mistakes. Pressing the `-0-` will save the current screen to an array, so that it can be restored `-0-` after several separate drawing operations.

Press the pen on the pad, and any free hand drawing will be displayed on the screen. In the scale of the original inverted box. To facilitate detailed drawing, there are four different drawing sizes available, and these are called by pressing the number keys from `-1-` to `-4-`.

`-1-` will set the pad to draw over the whole screen, `-2-` will draw on a quarter screen, `-3-` on a sixteenth, and `-4-` on a sixty-fourth. Each time the scale is changed, the program will invert and restore the relevant area of the screen. Whilst the full scale `-1-` will allow drawing over the whole screen, the other scales require the drawing area to be positioned over the appropriate area of the screen. This is done by pressing any of the four narrow keys. Each time the

drawing area is moved, the program will invert the relevant area of the screen to show where the drawing area is now positioned.

The program is error trapped to prevent the drawing area from running over the edge of the screen. To help position the pen in the right place when using the various drawing scales, the `-4-` key will place a frame over the drawing area. This eight by eight grid will be scaled to show the area covered by the whole pad, and will be displayed until another key is pressed.

There are several different brush types available as an alternative to the freehand pixel mode selected by default. These routines are called by the `-0-` key, and then give a choice of circles, lines, or boxes. Circle radius, and box line x/y offsets are selected, and then the program returns to the graphics screen. Freehand drawing will now use the selected brush type. To return to the main program press the `-0-`, which will also return you to the pixel drawing mode.

The next available function is the `Dragon's GET and PUT` command. This will get an area of screen memory into an array, and then allow it to be copied to any other area of the screen. Press the `-0-` to call the `GET` routine. Two lines will be drawn from the pen position, one off to the right hand border, and one to the bottom of the screen. This is to show the top and left hand edges of the area which will be got. When the pen has selected the correct point, press `Enter` to lock it in.

Now, as the pen is moved around the screen, the program will draw a box from the first point to the current point, indicating the total area which is going to be copied to the array. This area must not exceed 10240 pixels (10 x 1024, 100 x 100 etc) or it will be too big for the array. When the box is correctly positioned, press `Enter` again to copy the picture. If the area is too big for the array, it will not copy across and the program will continue to wait for the second



[illegible]

32361	94F67E2E233F77E2E2	131.4
32362	93F16B6E8C4088E88888	72.9
32367	88F1678C384F7E2E2F7E2E	128.5
32368	87F7F0E2E2E2E2E2E2E2	137.1
32369	A6E82F77E2E2E2E2E2E2	11.98
32401	87E2E2A807E3A8D7E2E2	11.25
32409	59A6E2E2E2E2E2E2E2E2	118.4
32417	59A8D7E3A8D7E2E2A7E2	114.7
32425	7E2E2F77E2E2E2E2E2E2	122.8
32433	87E2E2A807E3A8D7E2E2	11.25
32441	88E2E27E3A8E88D7E2E2	184.5
32449	7E2E2E2E2E2E2E2E2E2E	182.5
32457	8D7E2E2A7E2E2E2E2E2E	141.1
32465	7A7E2E2E2E2E2E2E2E2E	94.8
32473	1A8C2A482E2E2E2E2E2E	8.32
32481	D8E8FF838A81E7F7E2E2	1.239
32489	8E2E2E2E2E2E2E2E2E2E	3.21

[illegible][illegible]



# Listing 1

```

10 CLEAR200,32240:PCLEAR0:PROG04,1:
SCREEN1,0:LOAD*PROG000,0:IN*LOA
0*H000000,0:IN*
20 CO=H7F03:CU=H7F10:SO=H7F2:KS
4=H7F00:Y04=H7F00
30 DIM ARR(1200),ARR2(0,7),L0(30):GOSU
01230
40 GOSUB000
50 P1=H7F05:P2=P1+1:P3=P2+1:P4=H4F
00:P5=P4+1:P6=P5+1:P7=H4F7F:P
0=H7F74:P0=H7F03:PY=H4F04
60 GOTOF0
70 RR=INKEY$:IFRR=""THEN EXEC32501:
GOTOF0
80 IF RR=""THENGOSUB000:GOTOF0 ELSE
0 GOSUB000
90 IF RR<CH000(0) THEN 120
100 EXEC CU=PREM(Y04):R0=0:IF R0
0 THEN R0=0
110 POKE Y04,R:EXEC CD=GOSUB000:GOT
0 F0
120 IF RR<CH000(1) THEN 150
130 EXEC CU=PREM(Y04):R0=R0+0:IF R0
10 THEN R0=0
140 POKE Y04,R:EXEC CD=GOSUB000:GOT
0 F0
150 IF RR<CH000(2) THEN 180
160 EXEC CU=PREM(Y04):R0=R0+1:IF R0
0 THEN R0=0
170 POKE Y04,R:EXEC CD=GOSUB000:GOT
0 F0
180 IF RR<CH000(3) THEN 210
190 EXEC CU=PREM(Y04):R0=R0+1:IF R0
0 THEN R0=0
200 POKE Y04,R:EXEC CD=GOSUB000:GOT
0 F0
210 IF RR="2" THEN EXEC H4F02:EXEC
41134:EXEC CD:GOTOF0
220 IFRR<"5"THENG010 ELSE SOUND100
,1
230 RR=INKEY$:IFRR=""THEN 240 ELSE
IF RR="5"THEN R0 ELSE 230
240 CL:PRINT12,"SAVE BIGSCREEN,":
PRINT*PRINT:INPUT*SCREEN TITLE
(XXXX TO QUIT):RR:IF RR="xxxx"
THEN SCREEN1,0:GOTOF0
250 RR=LEFT$(RR,7)
260 POKE04,0:POKEY04,0:EXEC CD=SAVE
RR+"1",0070,9016,41134
270 POKE04,32:EXEC CD=SAVE RR+"2",
0070,9016,41134
280 POKEY04,102:EXEC CD=SAVE RR+"3",
0070,9016,41134
290 POKE Y04,0:EXEC CD=SAVE RR+"4",
0070,9016,41134
300 SCREEN1,0:GOTOF0
310 IF RR<"L"THEN 400 ELSE SOUND10
0,1
320 RR=INKEY$:IFRR=""THENG00 ELSE
IF RR="5"THEN R0 ELSE 320
330 CL:PRINT12,"LOAD BIGSCREEN,":
PRINT*PRINT:INPUT*ENTER TITLE
(XXXX TO QUIT):RR:IF RR="xxxx"
THEN SCREEN1,0:GOTOF0
340 RR=LEFT$(RR,7)
350 LOAD RR+"1,0:IN*POKEY04,0:POKEY
04,0:EXEC CU
360 LOAD RR+"2,0:IN*POKEY04,32:EXEC
CU
370 LOAD RR+"3,0:IN*POKE Y04,102:EX
EC CU
380 LOAD RR+"4,0:IN*POKEY 04,0:EXEC
CU
390 SCREEN1,0:RR="5":GOTO 310
400 IF RR="0"THEN SOUND100,1:GOTO0,
0+200,101,0,RR,PSET: SOUND100,1:
GOTO0
410 IF RR="5"THEN SOUND100,1:PUT0,
0+200,101,0,RR,PSET: SOUND100,1:
GOTO0
420 IFRR="0"THENG00
430 IFRR="5"THEN R0=0:GOTOF00 ELSE
IF RR="5"THENG01:GOTOF00
440 IF R0=CH000(0) THEN R0=R0:GOTOF
0
450 IF RR="5" THEN R0
460 IF RR=CH000(0) THEN STOP
470 IF RR="5"THENG01:GOTOF00
ELSE: IF R0=CH000(0) THEN R
0=R0+0:ELSE: IF R0=CH000(0) THEN R
0=R0+1
480 IF R0=CH000(0) THEN RY=RY+0:IF R
0 ELSE IF R0=CH000(0) THEN RY=RY
+0:IF R0=1
490 IF R0=1 THEN GOSUB000
500 IF RR="0" THEN 520
510 IF RR="5" THEN 500
520 IF RR="5" THEN 520
530 IF RR<"5" THEN 530
540 GOSUB000:LINE0,RY+1:R0+200-R0
,RY+101-RY,PSET,0
550 FOR R0=0 TO R0+200-R0 STEP (200
-RY+0):LINE0,R0+0:R0+200-R0,RY+101-RY
,PSET:NEXT R0
560 FOR R0=0 TO RY+101-RY STEP (102
-RY+0):LINE0,R0+0:R0+200-R0,R0
,PSET:NEXT R0
570 EXEC 41134:GOSUB000:GOTOF0
580 IF VAL(R0)>0THEN 70
590 ON VAL(R0)GOTO 530,560,570,590
600 POKE0,10:POKE0,10:POKE0,10:PO
KE04,10:POKE0,10:POKE0,10:R0
=0:RR=0:GOSUB000:GOTOF0
610 POKE0,00:POKE0,10:POKE0,10:PO
KE04,00:POKE0,10:POKE0,10:R0
=100:RY=00:GOSUB000:GOTOF0
620 POKE0,00:POKE0,00:POKE0,10:PO
KE04,00:POKE0,00:POKE0,00:POKE0,10:R0
=00:RY=00:GOSUB000:GOTOF0
630 POKE0,00:POKE0,00:POKE0,00:PO
KE04,00:POKE0,00:POKE0,00:R0
=004:RY=007:GOSUB000:GOTOF0
640 IF R0=0 THEN R0=0 ELSE IF R0
0 THEN R0=0
650 IF RY=0 THEN RY=0 ELSE IF RY
0 THEN RY=0
660 R0=0:RY=0:R0+200-R0,RY+101-RY
+1,R0,NOT-PUT(R0,RY+0:R0+200-R0,
RY+101-RY),R0,NOT-PUT(R0
,RY+0:200,RY),PSET

```

[illegible]

```

SOUND(88.1*GOTO58)
1338 R=ROCK(8)*PI*PI*47 ROWN(58) T4=44
    W=48 ELSEIF(ROCK(8)<PI) T4=84*W-
    54
1339 R=PI*CTH(41258)
1340 IF R#0 THEN DEFT(PI)*STRECK(4)
    +R(18)*GOTO1338
1348 R=LRC(1)*COS(PI)*STRECK(4)*COS(8)
    (*GOTO1338)
1358 LRC(11)=PI*4E22*PI*4*4*4*4*4*4
1368 LRC(12)=PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1378 LRC(13)=PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L

```

```

1388 LRC(14)=PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1398 LRC(15)=PI*4L*4L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1408 LRC(16)=PI*4L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1418 LRC(17)=PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1428 LRC(18)=PI*4L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1438 LRC(19)=PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L*PI*3L
1448 LRC(20)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1458 LRC(21)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1468 LRC(22)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1478 LRC(23)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1488 LRC(24)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1498 LRC(25)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1508 LRC(26)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1518 LRC(27)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1528 LRC(28)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1538 LRC(29)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1548 LRC(30)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1558 LRC(31)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1568 LRC(32)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1578 LRC(33)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1588 LRC(34)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1598 LRC(35)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1608 LRC(36)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1618 LRC(37)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI

```

```

1628 LRC(1)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1638 LRC(2)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1648 LRC(3)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1658 LRC(4)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1668 LRC(5)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1678 LRC(6)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1688 LRC(7)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1698 LRC(8)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1708 LRC(9)=PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI*PI
1718 RETURN
1728 (*C) 1996 BY PETER WHITTAKER

```

# Listing 3 Max Loader

```

10 THEN LOADER FOR 'MAXLOADER' REPOS
    Y DUMP, BY PETER WHITTAKER
20 INPUT"START ADDRESS";START
30 INPUT"FINISH ADDRESS";FINISH
40 FOR N=START TO FINISH STEP 5
50 PRINT N; " "
60 T1=0;INPUT R#(2=0
70 FOR M=1 TO LEN(R#) STEP2
80 L=VALC"0123456789ABCDEFH.2")
90 T1=T1+L*POKE#(2,L
100 Z=2+1;NEXT M
110 PRINT" = ";
120 INPUT Y
130 IF T1<T1 THEN PRINT"max=" - ENT
    ER L;HE AGENT;GOTO58
140 NEXT N

```

# Listing 3 Memory - dump

```

10 CLEAR255,25548;POLERR=PROCE4,1;
    LOW=BIOSCREEN,0;IN
20 CD=MPRESS;CU=4H7E18-5D-4H7E72;XG
    =4H7ECC;YG=4H47ED
30 SCREEN,0
40 PRINT#2,CHR$(8);CHR$(13);
50 "xxxxx GET PICTURE xxxxx"
60 CLS;PRINT#128,"LOW BIOSCREEN TO
    HIGH MEMORY.";PRINT;INPUT#1E
    R SCREEN TITLE";R#R#LEFT(R#,
    75
70 LOWR#="1.81H";POKER#4,8;POKEY#4
    ,8;EXEC CU
80 LOWR#="2.81H";POKER#4,32;EXEC CU
90 LOWR#="3.81H";POKEY#4,192;EXEC
    CU
100 LOWR#="4.81H";POKER#4,8;EXEC CU
110 "xxxxxPRINT OUT LOOP xxxxx"
120 POK#5283,PEEK 65283 AND254;:P
    184LE INTERRUPTS
130 G=255;GOSUB188
140 POK#4H7E70,4H7C1;POKE#H7E7E,4H49
    ;:H7E7E;GOSUB188
150 PRINT#2,CHR$(13);CHR$(13);
160 POK#5283,PEEK 65283 XOR1
170 STOP
180 FOR Y#0 TO 0 STEP 7
190 POKY#4,32;POKEY#4,Y;EXEC CU;PC
    OPY 1 TO 5;POKER#4,8;EXEC CU;POD
    PYS TO 2;:PULL DOWN TOP LINE O
    F GRAPHICS.
200 FORX#0 TO 255;Z=PPPOINT(X,83480)
    DINT(X,1)XZ=PPPOINT(X,23844)PPPOINT
    (X,3)XZ=PPPOINT(X,4)X16=PPPOINT(X
    ,5)X22=PPPOINT(X,6)X44=128;PRINT
    #2,CHR$(2);:NEXT X
210 FOR Y#0 TO 255;Z=PPPOINT(X,4834)P
    POINT(X,48)XZ=PPPOINT(X,58)X44=PP
    DINT(X,51)X88=PPPOINT(X,52)X16=PP
    DINT(X,53)X22=PPPOINT(X,54)X44=1
    28;PRINT#2,CHR$(2);:NEXT X
220 NEXT Y
230 RETURN
240 (*C) 1996 BY PETER WHITTAKER,

```

# Expert's Arcade Arena

Write to "The Expert" at Dragon User  
12-13 Little Newport Rd, London WC2H 9PP,  
with all your decade tips and hints.

**GOOD DAY** to all you good people and welcome to this, the third column. Yes, already this is a part of history. There have been so many letters that my entire house is packed with them. My postman has a hernia. My liver has left because she can't get into the bedroom for letters. On a scale of large to small this posting could not be anywhere near small.

But, loyal to you as I am, I have read every one of them and tasted some of the poles, and tried out the maps, and basically worked my nose off so that you, my loving, adoring, readership have this column free for you.

So, to business, first of all some news: some of you may be aware that Blazy have released a game similar to *Atic-Atic*. Well, you will soon have a choice between that, and a version of the same by Microdeal. Having seen both I can simply say that the Microdeal one is closer to the original but the Blazy one is more of an adventure (in certain aspects are needed to pass certain locations). I won't recommend one above the other, (I doubt the reviewers will do that for me, but I can say that I have no preference between them at the moment from the limited time I've played them.

Moving rapidly to your letters, first a big thank you for all the Jet-Set Willy maps. I have decided that the one published was the best of them as it contained a lot of relevant information in a clear table as well as a simple map.

Thank you to C. A. Smith, Ed. R. Vine, D. R. Gardner, Mark Bowen, Gavin Long, and Michael Ellison for their maps and also to anyone else who has sent one which I may have not received by copy deadline.

Now then, to some specific points. Mark Bowen of Kent writes with the following poles:

**Ninja Warrior** — Load up the game, type **PORE** 8488, M (where M is the number of lives) then type **EXEC**.

Mark says he has still got to further than level 4 and that we have not reviewed it. Well, Mr Mark Know-all Bowen if you take a look through your back issues to the issue dated October 1983 you will find John Sullivan's review which, for those not born then, I shall re-present in glorious non-

technicality here:

"My award for the most original game of the month has to go to *Ninja Warrior* from Programmer's Guild. In this excellent game, you, and up to five other players, control some figure wearing a judo suit. The ground scrolls beneath his feet, and you can use a joystick to slow him down, speed him up, or make him jump in the air. The "fire" button controls a sharp scissor kick that he performs.

"To gain a white belt, the landscape is littered with boulders that he can jump over, but a higher score is achieved by kicking them to dust. If he survives with tenails intact the test for higher grade belts presents him with lines to jump over, pits to traverse, and level errors to catch. Eventually (as they tell me), your warrior becomes a black belt. For me this was a highly entertaining game using a novel idea, smooth graphics, and good sound. I hope future programs from Programmer's Guild will be as good."

I believe Computape are now the sole suppliers of *Ninja Warrior* but I'm sure that you will correct me if I'm wrong. Personally, I'm quite a fan of the game, although my friends all find it rather boring! I have nudged the Dragon User office into giving it a re-review to expect one soon. My ratings stand at the end of this month's column.

Mark goes on thus:

"Do you know if Design Design are planning any new games?" — No, I don't, but I'll find out for you — "Is anyone any good at *Dark Star*?" — Yes, I am — "and if so how?" — I suppose I'm just brilliant.

"... it is about time you started this arcade arena. It is always claimed that your magazine must mediate between games and serious applications but there are always holes as many advertisements for games than serious applications so why not begin as much Editorial? The poem I am making is that your column should cover two or three pages..."

I agree with Mark but I'd like to know how you feel about it. Write to the usual address clearly marking your letters "The Expert".

Mark concludes by suggest-

ing that my style is very similar to that of Jason Cabaum (one of the reviewers). An interesting concept Mark, complete rubbish, but interesting nonetheless, and it has led me to spark off a "Who is the Expert?" competition. Yes, send your guesses as to who might be to the top address and the most interesting and amusing suggestion each month will win a prize worth absolutely NOTHING! I'll give you a clue to judge you in the right direction: I AM NOT NEARLY AS OLD AS A HUMAN.

Right, that's the competition set up, now here's a try for help from Matthew Pesham of Hindhead, he would like to know how to do the last screen in *Fantasy Flight*... Write if you have a foolproof method. I'd like some more maps from you all please, because I'm interested in this time are "Fantasy Fight", "The Dark Pit" and "The Wizard's Lair". Send them to the same address as usual please.

D. Flintnash of Burnley suggests I publish his scores saying he hopes I use a full or full page to publish them because it gives people some-

thing to read. Well, I'm quite prepared to refuse for the following reasons:

(1) I have no way to verify the scores or prove that they were not obtained on hacked versions of games.

(2) I don't really believe that people are interested in reading other people's hi scores, publishing them just serves to massage some probably already overlarge egos.

(3) There is, in my mind, no such thing as healthy competition. The idea of the column is not to find superior but to co-ordinate with each other to create a healthy environment in which we all share. My function is that of a co-ordinator, albeit a slightly talented one! Think of this as a computer obstacle.

That's about it for this month. Please keep writing, I have bought myself a warehouse to store your letters in so I'm all set now! See you next month with lot of poles and some interesting ideas on Shmoojacking you might like to mull over... and I promise we'll be back to the stupid humour again as well. I don't know how you can wait!

	G	P	A	V
<i>Ninja Warrior</i> (Programmer's Guild)	4	8	10	8
<i>Atic-Atic</i> (Blazy)	7	8	8	8
<i>Pub-Crawl</i> (S & H)	5	7	6	6
<i>Gremlin</i> (Microdeal)	8	8	7	8
<i>Superbowl</i> (Cable)	4	4	5	5

## The Mansion of Jet-Set Willy

1. THE BATHROOM
2. THE OBSERVATORY
3. MOREN LUM
4. UPON THE ROOF
5. UPON THE BATTLEMENTS
6. THE WATCH TOWER
7. WE MUST PERFORM A QUIRKAFFLES
8. I'M SURE I'VE SEEN THIS BEFORE
9. RESCUE ESMERLORD
10. TOP OF THE HOUSE
11. CONSERVATORY ROOF
12. UNDER THE ROOF
13. THE ATTIC
14. DR. JONES WILL NEVER BELIEVE THIS
15. THE GAMES ROOM
16. EMERGENCY GENERATOR
17. PRIEST'S HOLE
18. ABOVE WEST BEDROOM
19. ABOVE WEST WING





**LET'S BEGIN** with details of another feature—there, that should get everyone's attention. With the help of a solution from Simon Hargrave of Cossley Hill Farm, Uley, Dursley, Glos. GL11 5BH, I've prepared a handbook on *Trickboer*, so if you want a copy of that send in the usual s.a.s. and your wish will be my command.

One reader wrote in asking what *explains* the various handouts available, so here for an up-date on those, my friend. Firstly I've got a clue sheet for *Madness* and the *Minotaur*, as originally supplied by Dragon Data to anyone who wrote in with queries on that game. I've also got a copy of the notes that were on the cassette inlay card for *El Diablo*, as copies of this adventure now tend to be sold without the inlay, and the notes on it really do help you get started on what is a difficult game. Finally I've got solutions to *The Castleward* Incident, *Fifty-Six* and *Knights of the Tomb*. If you want copies of those then you only need send me emails a.s. — some readers send me envelopes you could fit an elephant in. For your information, I have the handouts on file on disc and simply print one out on A4 paper whenever I get a request for one.

A reader from *Gloucesters*, whose name I won't give in case he gets inundated with similar requests, decided to provide his own treatise. This reader used to be a tester for Salamander, and had spare copies of *White Cliffs of Dover* and *Phantasm* in Weymouth, which he sent to S. Goodman who'd been asking about the games in an earlier column. Thank you for that, and for the information that before loading either game you must **PCORE 25.6: NEW** to create the extra memory bank programs required. (And thanks to Mrs Fitzgerald of Abergave who phoned the office with the same information.)

## Madness

S. J. Edwards from St Barnabas, New Malden, Surrey KT3 5PH says, "Congratulations on producing the best adventure column in any magazine." Well, thanks, one does one's best, and I'd like to take this opportunity to thank my editor (whoever it is), my co-steps, my producer, my ... (rest of speech deleted). Anyway, what S. J. Edwards says is that he's having difficulty tracking down copies of the following and would be interested to hear from anyone keen to sell or swap *Madness* and the

*Minotaur*, *Dragon Mountain*, *Calisto Island*, *Black Sanctuary*, *Adventures Trilogy*, *Hiking*, *Monsters and Magic* and several titles that Touchmaster are now apparently sold out of: *Frost Clansmen*, *Monsters of Doom*, *Stalagins*, *Robinson Adventure* and *Criminal Moon*. He also wants, though they're not adventure, *Dragon Poets*, *Logos*, and *Dragon DOE*.

Help on a few titles is offered by Douglas Field, 14 Llewellynwood, Hasle, N. Humberstone HU10 8PT, the titles being *Kings of the Wizard*, *Pan House* and *Phate Adventure*. Invermire he asks if anyone knows where he can buy some out-price adventures for his 32k Tandy Coco. Any offers?

## Help

Peter Williams of 37 Datchetall Road, Worcester WR9 3RD is also trying to do me out of a job and offering help to anyone stuck on *Jagaposition*, while Mark Galsworthy has completed *Black Sanctuary*, *Calisto Island*, *Exco*, *Death Mines of Gines* and *Stenianigars*, and offers help on any of those. Don't forget the s.a.s. when writing to any reader for help, of course. Mark wants to know if anyone has come across any adventures in French or German, so he can combine his favourite hobby with his 'C' level revision. A nice trick, Mark, and if anyone can help him get away with it write to Mark Galsworthy, 187 Pinewood Park, Gorse, Ramborough, Hants GU14 5LE.

If you were studying Italian, Mark, you could have tried contacting Marco Focella of Via San Rocco 5, cap 07105 Verona, Italy. Marco wrote to say that after three months of difficulties he eventually finished "the fantastic *El Diablo*." I think the post had difficulties, too, as Marco wrote in January and the letter arrived in April. Still, he offers help to anyone stuck in the adventure, or if you just fancy contacting an Italian (*Dragon Games*, why not write?)

Christopher Bayne from St Albans wrote about various things, including the suggestion that to make more space for the actual column we should remove the large heading and also refrain from printing cassette covers and other illustrations on the page. Personally I think a solid page of text would look pretty boring, but has anyone else any strong views on that? Christopher also suggests that a few notes for beginners should be made available, so leaving even more room in the actual column for product

reviews and clues. If there's sufficient demand from beginners for that, then I'll try to do something about it.

To keep Christopher happy, then, I'd better get on with some clues, like these from Stuart Estel of Birmingham, in Joe Kingdon's to kill history: **YNUZMNA MORP DUBINS AND DROKS ESU**. To escape the dungeon: **NAMWONS NACH DCI MORP MOC ESU**. In *Towers of Death*, to kill Medusa: **ROPRIM THICOP**. The order in which to move the armour: **EERTH DWT CRT ENO**.

A few clues on *Trickboer* from Matthew Norman of Edmonston. To cross the first field: **HPATONIC MORP TELUMA WRMAC**. To remove grate: **TI REVO DCA RUOP**. More help from a reader in Derby Dale who forgot to sign his or her name. On *Franklin's Tomb*, to stop the water in the sequence: **ELOH-OLUP EPTT DVA OULP DRAP**. To find the key: **HSSAMURG HASDAAA HSSAMURG ETUTATS DT OG**. To open sarcophagi: **SHALLES DHT MORP DRUGAL A ROHTUOM STH GTNH RSTAW RUOP**.

Can anyone tell Pat Perry where to clip the help in *El Diablo*? Come to that, can anyone tell me? Pat lives at 30 Lees Road, Mansfield Woodhouse, Notts, and I live in an old shoebox in the corner of the *Dragon* User office.

## Code

Andrew Hill has got a code, not in the note but in *Operation Sahas*, and he's willing to pass the information on to others, particularly Justin Field who was asking about it in the April issue. The code for part 1 is 13 (ENTER), and for part 2 is **TANGO**. There didn't seem much point in printing those brief things backwards, so I hope nobody minds. Andrew also asked for a good adventure for a beginner, preferably with graphics — the adventure, that is, not the player. I'd have thought something like *Black Sanctuary* or *Sea Quest* would fit the bill, both with graphics, both enjoyable, not too difficult for the experienced player but good for the beginner in that all the problems are fairly logically solved and the scale of the games isn't so big that you get lost wandering down endless corridors and through mazes.

Gavin Griffin has already had a rejection in the column, but somehow his address came out wrongly so I'll try again. So Did

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(SEE LISTING PAGE 7)

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Bawn, Park Tallaght, Co. Dublin, Ireland. There's what it looks like, anyway, but as Gavin's handwriting is a mile of upper and lower case it's a bit tricky to read. Letters will reach him anyway, I'm sure, and the reason for writing is that Gavin does the hearing from other readers, and can help with *Starangars* (not surprisingly), *Justaposition*, *Caliste Island*, *Black Sanctum*, *Keys of the Wizard*, *Madness* and the *Minotaur* and most of *Trackbore*. Gavin kindly sent me a map of the lands of *Justaposition*, which he asked us to print, but the quality of the photocopy isn't good enough to reproduce. I'm afraid. Gavin says we should have a pen-pal section in the Magazine — well, if enough readers want it then we'll introduce it, but as I'm always printing readers' addresses anyway, I hope you always feel free to write to each other without needing a formal introduction. So if you want an Irish pen-pal with an interest in swapping tips, jokes and adventure hints, then Gavin's your man.

Stephen Houston (I think) of 4 Bankcroft, Langley, Preston, Lancs PR4 5AL, also sent in a *Justaposition* map, and we will also about reproducing that as several readers have asked about one, and Stephen thinks the adventure section should be a lot longer — by at least five pages! Steady on, Stephen. Too much late-night adventuring has affected your brain, I think. What Stephen needs help in is *Madness of Doom* and *Possible Adventure*. In the format, how to get across the acid to reach the coffin, and in the latter how to get across the

oil lake instead first. He also asks if anyone has hints sheets and maps of these times. Mail me, so over to you.

Nick Hodge has completed *Justaposition*, which he thinks every dragon owner should buy, so if you have and get stuck write to Nick at Canonic, Handcross, Bridgewater, Somerset TA1 6AJ. Nick sent me no less than 20 clues for the game — maybe I do need an extra five pages after all.

Some people have been having co-ordinate trouble in *Scrypt*, so James Bonfield of 7 Water End, Westlingworth, Leeds, Beds SG10 2BA to the rescue. "To enter the co-ordinates you must take the row you wish and then press the numbers and pull the lever. For example, if you

wanted to go to the planet you must type **PRESS ZERO, PRESS FOUR, PRESS ONE, PRESS FIVE, PULL LEVER**. The first place to go to is the planet." James also gives the other co-ordinates you need, which are 2-7-3-0 to the emerald and 1-0-0-3 to Dark Voden. James is having trouble with *Keys of the Wizard*, and adventure not many have managed to solve, and wonders: how to open the wizard's gold box; how to open the chest in the hidden temple; how to open the stone box in the hidden tomb; and how to defeat the jester. If anyone has managed to put together a solution on *Keys of the Wizard*, do send it in then I can start another column by saying "Let's begin with details of another treasure."

## Adventure Contact

To help puzzled adventurers further, we are instituting an Adventure Helpline — simply fill in the coupon below, stating the name of the adventure, your problem and your name and address, and send it to Dragon User Adventure Help-

line, 12/10 Little Newport Street, London WC2H 7PP. As soon as enough entries have arrived, we will start printing them in the magazine.

Don't worry — you'll still have Adventure Trail to write to as well!

Adventure  
Problem:

Name:  
Address:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Adventure Contact

**Adventure Castle Adventure Problem** Is it possible to smash glass in north exit, if so how? How do I unfix the window? **Name** Andrew Hall **Address** 58 Woodworth Avenue, Castle Ridge, Stafford ST17 9UE.

**Adventure Sequester Problem** What do you do with the mirror? Where do you tie the balloon to? What use is the metal detector? Where is the key? **Name** Robert Gooding **Address** 52 Tolerton Drive, Irvine, Ayrshire KA12 0GE.

**Adventure Aqueduct 471 Problem** I can't seem to do anything — keep going about first level locations, but can't find anything or go anywhere different. **Name** Robert Gooding **Address** 52 Tolerton Drive, Irvine, Ayrshire KA12 0GE.

**Adventure Justaposition Problem** How do I get over the first balcony? Is there a hint sheet? **Name** Andrew McCall **Address** 23 Top Cliff Court, Morley, Nr. Leeds LS27 8UG.

**Adventure Trackbore Problem** How do I get past the force-field? **Name** Neil Davies

**Address** 15 Packer Close, Peering, Colchester, Essex CO5 0LP.

**Adventure Justaposition Problem** How do you get the emerald? Where are the Doors of Bawn? **Name** Wynne Michael **Address** Ashleigh Farm, Gayton-in-Marsh, Nr. Alford, Lincs LN13 0AR.

**Adventure Demoniac Problem** Have found dead king, long tough rope and burning torch and the full stop. (That's what it says). **Name** Conrad Evans **Address** 52 Maccles, Cardigan, Dyfed, Wales SA43 1BE.

**Adventure Trackbore Problem** Can't get past the force field or get to the Great Name South Robinson **Address** 9 Brookhouse Close, Denby Dale, West Yorks.

**Adventure Black Sanctum Problem** How do you get out of the forest? And everything after that? **Name** Neil Pyatt **Address** 31 Marlborough Close, Gaze, Essex RH16 3SL.

**Adventure Justaposition Problem** Where's the red note (ie)? Where's the spider?

Please help. **Name** Simon Jones **Address** 37 Collins Meadow, Harlow, Essex CM19 4EN.

**Adventure 1 Operation Saltsa 21 Adventure 1st Problem** 1) Can't get past the first chapter. I can answer the questions, but not get the code. 2) Completely stuck. **Name** Andrew Marshall **Address** 17 Goodwood Place, Trenham, Stoke-on-Trent ST4 8BO.

**Adventure Wings of War Problem** How do you get past guard with Luger in chains? **Name** Mark Lane **Address** 11 Hampden Close, Bicester, Oxon OX6 7JG.

**Adventure Justaposition Problem** I can't get out of the emerald tower with the Emerald Emerald. **Name** Simon Pike **Address** 4 Alder Close, Eastley, Wrexham, Clwyd LL14 4BL.

**Adventure Operation Saltsa Problem** Can only find agent number one, need help to find the others. **Name** Margaret Winkler **Address** 21 Akeley Avenue, Chappeltown, Sheffield S20 4PG.

**Adventure Barons of Cad VI Justaposition Problem** Where are the deeds of Baron? **Name** Steven Edington **Address** 60 Thornbury Road, Newbury, Wiltshire, Wiltshire RG12 1EW.

**Adventure Justaposition Problem** I am on street level, but I can't find the mono car. **Name** S. Monaghan **Address** 41 St Brendan's Crescent, Greenfield, Walskington, Dublin 12, Ireland.

**Adventure Justaposition Problem** I can't get past the JRL Ghost. How do you get on to the planet surface? Is there a hint sheet? **Name** Howard Johnson **Address** 10 Greenfield, Aveston, Bristol BS12 2DY.

**Adventure Total Eclipse Problem** How much do you need to go to a higher tech level? **Name** D. Gust **Address** 214 Balthams Lane, Craney Green, Haverham, Herts WD3 3LJ.

**Adventure Return of the Ring Problem** What do you do on the forest moon? **Name** Matthew Lovell **Address** 16 Carnes Close, Coesbridge, South Glamorgan, Wales.





# Mind The Cracks

*Gordon Lee hops from slab to slab in pursuit of this month's prizes — some great incentives.*

LAST MONTH we took a cursory look at random numbers, including reference to the Dragon's random number generating function. This, as is the case with the same command on other microcomputers, has the disadvantage of producing the same sequence of numbers when starting from cold. Clearly, if we are using this command in a program this problem needs to be overcome. An adventure-type game would be of limited interest if, for example, objects were always set at the same locations and the response to specific commands were always the same. Similarly, with arcade games, moving objects that are too predictable would not provide much of a challenge!

One way of overcoming this problem is to include the following lines in your program:

```
100 PRINT "PRESS A KEY TO
CONTINUE"
110 AS=INKEY$-AND(255): IF
AS= "" THEN GOTO 110
```

The lines are numbered from 100 and 110, but they can be altered to fit anywhere in your program, preferably near the beginning, say following the title or instruction page. Using this routine, the computer will spin through its sequence of random numbers for an unpredictable period of time (until a key is pressed), and will so ensure that subsequent use of the random command will produce a truly unpredictable number.

Last month, I gave a listing for a program which used the RND function to plot a random walk on the Dragon's 32 by 16 low resolution text screen. This concept of 'random walking' has received a certain amount of attention in the mathematical press. At its simplest, such a walk can be one-dimensional. Imagine that you are standing on a straight line, stretching in both directions to infinity. You toss a coin. If it falls heads, you move one step to the left; if it falls tails, you move one step to the right. By expanding this concept to two dimensions we arrive also walk on a plane surface, like the one illustrated in last month's program. The competition this month involves taking a random walk on a much larger plane surface. Imagine a square quadrangle paved with a regular arrangement of square paving slabs, 101 slabs along each edge. The quadrangle consists of a central area of 99 by 99 white slabs, and around this is a single row of grey slabs.

Starting at the very centre square we are going to take a random walk, using a pseudo-random sequence of digits to decide on the direction of travel. This is determined by taking successive digits in the decimal part of the expression  $1/17388$  which begins 0.00057507919 ...



Each digit determines the direction in which we move, as shown in the diagram. So, for '1' move one square north, for '2' move one square diagonally north-east, and so on. The digits zero and nine are ignored whenever they occur. So we would start our journey by moving south, west, south, west, etc. The question is, at which point would we be forced to first step onto one of the grey border slabs? Please give

your answer in the form: 'North edge, 17th slab from south-west corner' — or whatever!

For collectors of mathematical trivia, the decimal value of  $1/17388$  repeats in cycles of 17388 digits. Its full value was first calculated by the 19th-century mathematician William Shanks, who also computed the value of  $\pi$  to 707 decimal places. When this value of  $\pi$  was rechecked it was found that the digit '7' occurred much less frequently than did the other digits. Scholars at the time put forward all sorts of theories as to why this should be. In fact, Shanks had made an error in his original calculation, and all digits after the 528th were incorrect. Once this had been remedied the frequency with which the ten digits occurred, balanced out, as indeed they do for even longer expansions of the value of  $\pi$ . In this respect,  $\pi$  itself would be a pseudo-random generator.

We begin, last month, by linking  $\pi$  and random numbers so it is perhaps appropriate that we should now conclude at this point.

## Prize

This month we're back in arcade country, with 20 copies of last month's five-page miniseries shortly space ships game Moon Cresta, courtesy of Incentive Software, as prizes. So take steps to locate the answer, and win some well-earned brain relief.

## Rules

To win a prize game, you must send us the answer to the problem in the form of the location of the slab in question, and a printout (or typeset) of the program you used to solve it. No cassettes please — they won't fit in the competition box.

Make sure your name and address are printed clearly on your entry, and mark the outside of your envelope 'July Competition' (without which your entry will not even find the competition box).

As a tie-breaker, complete the following phrase: "The Dragon takes a giant step

Entries must reach us by the end of August, and winners will be announced in the September edition. Tie-breakers will be judged on their memorability and the editor's decision is, as usual, final.

## April Winners

The 15 lucky winners will be receiving copies of *Demotaster* from Micro Vision. They are: E. A. Newman of Adlestone, M. J. Stanfield of Kingstonsall, M. Ingram of Leeds (ghet! one short name), J. C. Storey of Carnation, M. Stone of Jerusalem, Mark Hodge of Walsingham, Phil Rogers of Wootton, Liverpool, Clav Melsen of Malmheden, Denmark, C. Jolly of Grove Park, London, D. Dickenson of



Rosley Park, Stafford, F. J. Taylor of Adleton, Middlesbrough, Justin Hewitt of Hinton, Dorset, Lionel Deane of Aintree, France, A. A. Skeels of Cheshire, and Rachel Edmunds of Sedgely, Co Durham.

All agreed that the number of volunteers in the room was 52 (not counting the Competition Master, who could make a 53rd — but we didn't need to know that). Tie-breakers were heavy on the beans but our favourite read: "I want to visit Greenland ... because I think I left my car keys there."

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